Medical
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THE BRITISH JOURNAL
OF
OPHTHALMOLOGY,
JANUARY, 1927

COMMUNICATIONS

BRITISH MASTERS OF OPHTHALMOLOGY SERIES

19.—JOHN SCOTT, 1798-1846

BY
R. R. JAMES
LONDON

IT must be about nine years ago that I was asked by Dr. Alban Doran, who was engaged in sorting and cataloguing the collection of old surgical instruments in the museum of the Royal College of Surgeons, to pay him a visit and see if I could help in identifying some of the old eye instruments. Among others I was shown a small knife, which reminded me of a hedger's bill-hook, sharp on the convexity instead of on the concavity; and I was able to refer Dr. Doran to Scott's monograph on cataract, published in 1843. I never gave another thought to the matter till I read the affectionate reference to him in Dalrymple's atlas (*Brit. Jl. of Ophthal.*, Vol. X, p. 245).

I had some difficulty in running Scott to earth, *i.e.*, in finding an obituary notice. The *Lancet*, Vol. I, p. 279, 1846, gave me the fact that Mr. Scott had recently resigned his office of Surgeon to the Royal London Ophthalmic Hospital; but it was in connection with a "grouse" on monopoly in hospital staff appointments, typical of those stormy times of medical journalism. From the same source I found that Mr. James Dixon had succeeded to the vacancy;

while from the *Medical Times and Gazette* I obtained the fact that Mr. Caesar H. Hawkins had succeeded to his vacant post on the Council of the Royal College of Surgeons.

Mr. H. E. Powell, of the Royal Society of Medicine, suggested that I should consult the Surgeon-General's catalogue, and this gave me the reference to an obituary notice in the *Medical Times and Gazette*, Vol. XIV, p. 135, 1846. I found later that this notice had been printed practically *verbatim* into the Medical Directory for 1847; but I had missed it there in a rather hurried search.

This notice bears evidence that it was written by someone who knew Scott well, but it can hardly be described as *nil nisi bonum*, for I have rarely, if ever, read a more spiteful obituary. I abstract it as follows:

He was a son of Mr. Scott, surgeon of Bromley, and was born in 1798. Educated at a private school at Sevenoaks and later at The Charterhouse, he was apprenticed to Sir William Blizard, Surgeon to the London Hospital. After having taken his qualification at the Royal College of Surgeons and at the Apothecaries Hall, he joined his father in general practice at Bromley; but he was "restless, energetic and ambitious," and after his marriage to a Miss St. John, he gave up general practice and settled in the City as a surgeon. He was elected surgeon to the London Hospital and to the Moorfields Hospital. The obituary states that his chief *forte* was rapidity in diagnosis. "As an operator, bold but not cool, rapid without being dexterous." He was said to have been the first English surgeon to perform the operation for removal of the maxilla. "Verbose as a lecturer," he appears to have been more successful as a clinical teacher; while he was very expert at strapping and bandaging. "As an author he could not, however, expect to be very successful, being neither an extensive reader, a close reasoner, nor a deep thinker." He was an honest, but very irritable man; "he seemed fond of children yet had no family." He was apt to assume a sense of superiority to his colleagues and was usually antagonistic and in opposition to them. "Men in general practice rarely, if ever, called him in a second time." He is said to have had no sympathy with humanity. He was tall, thin, and active, with sharp, rigid, features, and possessed a quick, grey-looking eye.

His death occurred at Brighton, April 11, 1846; he was survived by his father and a sister. He died rich and having bequeathed a jointure to his widow "he left the bulk of his fortune to charity, entirely omitting those by which he rose to eminence, and chiefly selecting those of an evangelical order."

His will was proved in London in April, 1846, by his executors, among whom were two parsons. He is described as late of Park

Lane, but dying at Brighthelmstone, *i.e.*, Brighton; so he must have left the City.* The estate was sworn at £100,000.

The Lancet of May 9, 1846, has a note that Mr. John Scott, late Surgeon to the Ophthalmic Hospital, has bequeathed a large portion of his immense fortune to various public charities.

Scott was elected Assistant Surgeon to the London Hospital in 1827, Surgeon in 1831, and resigned in 1845. He was a member of the Council of the Royal College of Surgeons, 1844-1846. Mr. Percy Flemming informs me that Scott was appointed to the staff of the Royal London Ophthalmic Hospital in 1827, and that he resigned in 1846.

Besides his work on cataract he was the author of a treatise on diseased joints and a work on tic douloureux.

CATARACT

This small brochure of 71 pages was published by Churchill in 1843, price half-a-crown. My own copy is a presentation copy, with author's inscription to Sir Benjamin Brodie. The title page is as follows:

CATARACT,

AND ITS TREATMENT,

COMPRISING

AN EASY MODE OF DIVIDING THE CORNEA FOR ITS EXTRACTION,

AND

APPROPRIATE MEANS FOR REMOVING THE DIFFERENT FORMS OF THAT AFFECTION.

BY JOHN SCOTT,

SENIOR SURGEON TO THE ROYAL LONDON OPHTHALMIC HOSPITAL, SURGEON TO THE LONDON HOSPITAL, &c.

The preface is from 10, New Broad Street, and is as follows: "I have long considered that the chief difficulty and the chief danger attending the extraction of cataract has arisen from the force that is necessary to transfix the cornea with the instruments commonly employed for that purpose; and that spasm of the recti muscles, induced by that force, compressing the iris between the hard lens and the side of the knife, and occasioning inflammation of that membrane, has been the chief cause of an unfavourable result of the operation. It therefore occurred to me that if these inconveniences could be obviated, the facility of performing the

*Scott is described as of 10, New Broad Street in the London Medical Directory of 1845. In 1846 he appears as of 17, Park Lane.

operation would be greatly increased, and its success proportionally augmented. With this view I have constructed the knife described in the following pages, and having now tested its utility in a great number of cases, I am anxious to afford to others the opportunity of using it with the advantage that I have derived from its employment."

The little monograph is well worth reading at the present time, not so much for any startling facts about cataract, but as showing the minute care which surgeons of an earlier day devoted to the question of the patient's general health prior to operation. I often think that they had the advantage over many of us to-day in this respect, and that our increased knowledge of pathology and bacteriology has inclined us to pay insufficient attention to a most important question.

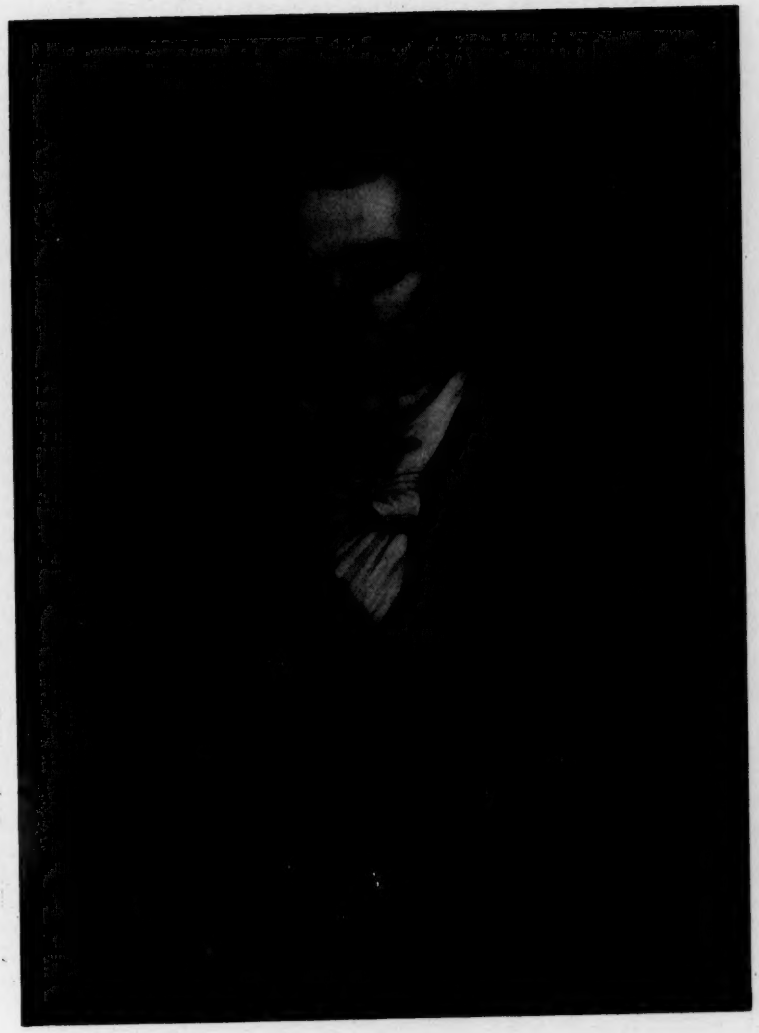
Some of my readers who may not have given much thought to the derivation of the term cataract will be interested in the opening sentence. "The term cataract is derived from the Greek word *κατάρακτης*, a gate or portcullis ("Herodotus," Book V, Chap. 6) . . . . It is manifest that there is no analogy between an opake lens and a waterfall, while that between a cataract shutting up the aperture of the pupil and a gate or portcullis is sufficiently obvious."

Cataract is sharply differentiated from false membranes in the pupil and is divided into hard, soft, and fluid. The first 17 pages deal with the general description of cataract; the different forms; symptoms; diagnosis of the different forms; diagnosis of cataract from other affections, chiefly glaucoma; the causes; prognosis; and congenital cataract. The rest of the pamphlet deals with the treatment.

"I consider that the operation ought rarely to be performed on an eye that retains a useful degree of vision, for should it unfortunately fail of success, the patient will complain that he has been deprived by it of the vision he previously enjoyed, and probably he will be slow to believe that he would at all events have lost his sight even had he not submitted to the operation."

Extraction in cases of congenital cataract "in which the centre of the lens only is opake, its circumference still remaining transparent," is not recommended; "by the aid of belladonna he may retain useful vision for years, and the vision he will enjoy by the aid of convex glasses is so inferior to that through the margin of the natural lens that he will see worse than he did before the operation."

Early cataract could be removed by solution (needling), but Scott does not recommend this, unless "the circulation be so feeble that there is not sufficient power to heal the section of the cornea; if there be extensive synechia posterior, or any other reason to



JOHN SCOTT, 1798-1846.

forbid the extraction of the cataract, its early removal in the manner just alluded to may be had recourse to with advantage."

"Experience fully proves that in old people, whose powers are failing, warm weather is so very much more favourable for the healing of the section of the cornea than cold, that it is exceedingly desirable not to operate in winter." "I do not think it desirable to operate on both eyes at the same time. I am fully aware that if one eye be lost in consequence of the operation the second eye will rarely be confided to the same operator, and another surgeon will thus have the opportunity of acquiring considerable credit at the expense of his neighbour; but this consideration does not invalidate the arguments that have been used in favour of the single operation in regard to the welfare of the patient, in comparison with which the advantage of the surgeon deserves not a moment's consideration. I scarcely ever operate when one eye only is affected. The only exception to this rule is in the case of young persons in whom the cataract is soft and consequently white and very remarkable, and they are usually very desirous of getting rid of the appearance, notwithstanding they are fully given to understand that the operation will not be followed by any advantage with regard to their vision."

The three varieties of operation are extraction, depression, and solution. "A hard lens is unfavourable for solution. . . ." "It should therefore be an invariable rule to examine the eye when under the influence of belladonna before determining on the propriety of operating by extraction; and this is more especially necessary as iris adhesions cannot always be detected in the natural size of the pupil." Arcus senilis is no contraindication to the operation, but a violent cough is. "If the patient has any symptom of gout or rheumatism the operation must not be performed till they are removed; if the digestive organs be in an unhealthy condition they must be restored to their natural state. If a plethoric state of system prevails it must be reduced; and this will be done much more safely by abstinence, at the same time that the bowels are freely acted upon, than by suddenly reducing the volume of circulating fluid by the abstraction of blood. On the other hand, the circulation may be so feeble that there may not be strength in the system to institute the healing process in a structure of so weak vital power as the cornea. In such cases the patient's power must be restored as far as is possible."

Scott prefers the upper transverse section of the cornea; the instruments he advocates are as follow: A cornea knife, a blunt-pointed curved knife for enlarging the section if necessary, a curette for lacerating the capsule, a sharp-pointed hook for removal of the lens if a fluid state of the vitreous should prevent its being removed by pressure, and a pair of Maunoir's scissors.

"Those who have ever performed the operation of lithotomy with the gorget, and afterwards with the small beaked knife first used by Sir William Blizard, and have contrasted the force necessary to make the section of the prostate gland from without inwards by means of the former instrument, with the facility with which, the latter being introduced into the bladder, the section can be made from within outwards, will readily understand the advantages that attend the mode of operating I now propose, as well as the reasoning that has led to its adoption."

"The objects I propose to attain in the construction of the knife are first, that it shall be of sufficient length to traverse completely

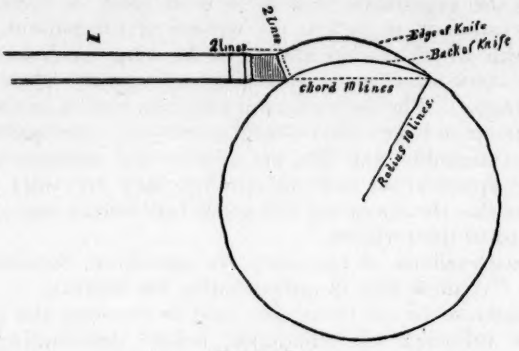


PLATE I.

the anterior chamber and divide the nasal margin of the cornea; second, that it shall increase in width and thickness from point to heel enough only to prevent the escape of the aqueous humour in its transit across the anterior chamber, but that its width shall have no reference to the dimensions of the section that is to be made, as this circumstance, I conceive, has occasioned all the difficulty of its introduction and the chief danger of the operation; third, that it shall be of such a shape and figure that when introduced in the middle of the temporal margin of the cornea and carried across the anterior chamber it shall readily puncture the nasal side of that membrane, and when placed in this situation the cutting edge shall be so far beyond the pupillary margin of the iris, and opposed to so large a portion of its anterior surface as will prevent its escape beneath the edge of the knife to endanger its division in making the section of the cornea; fourth, that when the section of the cornea is thus about to be made the edge of the knife shall be opposed only to the margin of the section on either side, and not to any extensive portion of its internal surface, whereby its division would be attended with difficulty as is the case in using Beer's knife."

"In order to attain these objects the knife must describe a portion of a circle of larger diameter than that of the cornea; and after having tried a vast variety of shapes and sizes the one I now propose seems to me to fulfil the foregoing indications the most effectually. At first I used a much narrower and finer knife, but I found that in introducing a cutting instrument of such a length the aqueous humour was liable to escape unless it increased more rapidly both in width and in thickness. I have also tried one wider at the heel, but in that case greater force is required for its introduction, which is not counterbalanced by any commensurate advantage in completing the section, unless the cornea be of unusually large dimensions. The back of the knife describes a sixth part of the circumference of a circle the radius of which is ten lines. The chord of the arc formed by the back of the knife is, of course, also ten lines in length, being equal to the radius of the circle; it is therefore greater by four lines than the diameter of the cornea, and the blade is consequently quite long enough to complete the section of that membrane without difficulty. The knife is two lines in width at the heel, whence it gradually tapers to the point; it also increases uniformly in thickness, as well as in width, from the point to the heel, so as to occupy completely the aperture it makes in the cornea for the purpose of preventing the escape of the aqueous humour."

"The dotted line A is six lines in length, equal to that of the diameter of the cornea; it extends between the two points at which the back of the knife is placed in that membrane when it is transfixed by the instrument. From the centre of this line, which is also the centre of the cornea, to the cutting edge of the knife, is rather more than two lines; and since the radius of the cornea is scarcely three lines, when the knife is so placed there can be little danger of the iris falling forward before its edge, as the aqueous humour escapes in completing the section of that membrane."

"In making the upper section of the cornea with this knife it is to be held in the usual manner, between the thumb and two forefingers, the two other fingers resting on the patient's cheek, and the handle of the knife slightly inclined towards the side of the face, while the point punctures the cornea on its temporal margin; the handle of the knife is then to be brought upwards with a sweep as the blade traverses the anterior chamber; and when it has punctured the nasal side of the cornea the handle will be nearly at a right angle with the temple. The knife is then to be carried completely across the anterior chamber. In doing this great care must be taken to press firmly downwards with the back of the instrument so that the wound may not be unnecessarily enlarged by its cutting edge. This being accomplished the point of the knife will have reached the nasal canthus of the orbit, and its

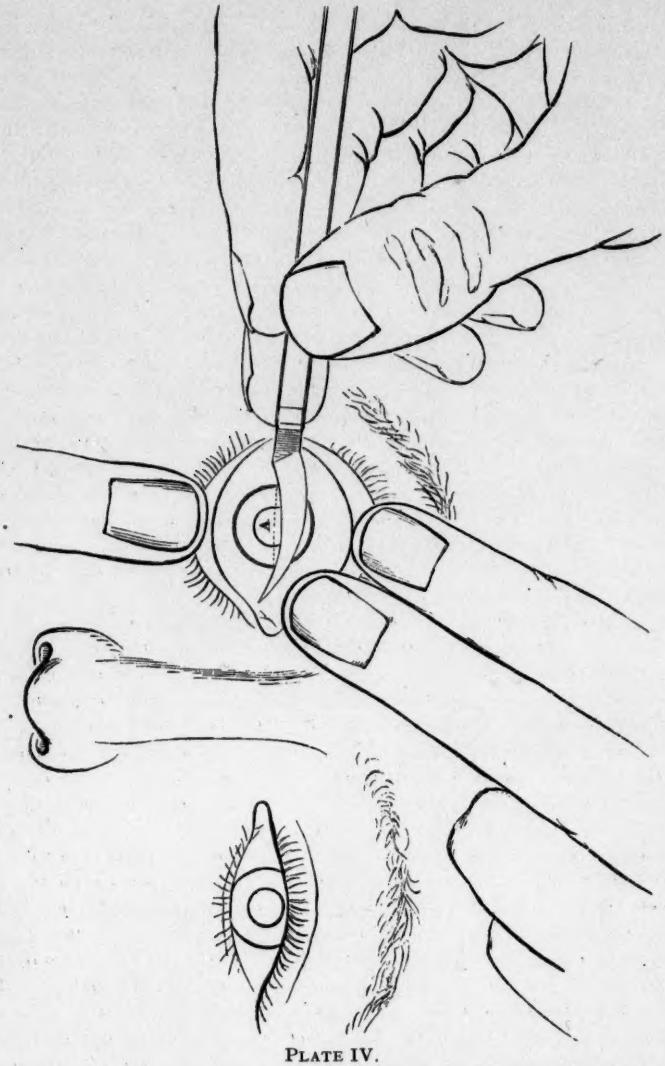


PLATE IV.

cutting edge will be so far beyond the pupillary margin of the iris that it cannot be readily divided in completing the section of the cornea. The point of the knife is then to be carried upwards, the handle being slightly inclined in the opposite direction. The section of the cornea on its nasal side will now be complete, a

small portion at the upper and outer part only remaining to be divided; and this is readily done in the withdrawing of the instrument. In this way the cornea being transfixed by an instrument of such a size only as will prevent the escape of the aqueous humour, no unnecessary force is employed either in accomplishing this object or in preventing the eye from rolling inwards. The section is completed, not by thrusting a wedge-shaped knife through the anterior chamber the cutting edge of which divides the circumference of the cornea only by the force with which its back is pressed against the opposite side of the section, but by an instrument that accomplishes the division of the membrane independently of any such pressure on its back. No unnecessary force is therefore had recourse to, and consequently spasm of the muscles of the globe is much less liable to occur; the aqueous humour is much less likely to escape; and if it should do so the shape of the knife and its position in the anterior chamber are such, that the iris can scarcely fall forward before its edge; and even if this should be the case it will much more readily recede behind it under the slightest pressure of the finger on the cornea."

In those old days it was customary to bleed the patient the day before and the day after the operation. Scott found this to be unnecessary and harmful; he records his practice at the Royal London Ophthalmic Hospital "where in 50 consecutive cases" phlebotomy was not performed.

I have searched contemporary text-books without finding any allusion to Scott's cataract knife, and no diagram of it is included in the large page illustration in Hirschberg's *Geschichte*. I suppose that his colleages did not think it worth trying, or perhaps they were satisfied with the Beer's knife and the flap extraction; it seems to me to mark a step in the progress of cataract extraction from the knives of Beer and Wenzel to the more perfect linear knife of von Graefe, modified by George Critchett; who, by the way, was apprenticed to Scott, *vide*, *Brit. Jl. of Ophthal.*, Vol. VII, p. 353. For this, if for no other reason, it has seemed to me desirable to try and rescue Scott from oblivion by this short memoir.

The portrait of Scott is a photograph, taken by Miss Blake, of an engraving of his picture by H. Howard, R.A., which hangs in the London Hospital Medical College; for permission to have this photographed for reproduction I owe a debt of gratitude to Professor William Wright, Dean of the Medical School.

The diagrams 1 and 4 are reproduced from Scott's monograph by kind permission of Messrs. J. and A. Churchill.

Messrs. John Weiss & Son Ltd. inform me that an illustration of Scott's knife appears in an old book of pen and ink sketches of instruments in the possession of the firm. The book is dated 1849.

THE CORNEAL SECTION IN CATARACT EXTRACTION; A SMALL MANOEUVRE

BY

R. FOSTER MOORE

LONDON

I HAVE found the following manoeuvre of considerable help in some cases of extraction and as such it seems worth recording. It seems improbable that it has not previously been employed, but I have never seen it described and I know of no one who has made use of it. It is a means by which buttonholing the iris in making the corneal section may be avoided.

It happens sometimes when cutting out that the iris falls over the knife and as the section is completed a portion of it is thus cut away. My habit is to incise the lens capsule with the knife on its passage across the anterior chamber, and I fancy the complication mentioned happens more often where this is done than when the capsule is incised by means of a cystotome on completion of the section. It is, of course, true that if one simply goes ahead, cutting through the iris deliberately, the cases usually do perfectly well, but there are two disadvantages. One is the pain felt by the patient and the second is that one has little or no control over the size and shape of the iridectomy. The resulting coloboma may be neat and satisfactory; it may, however, be large and irregular, and the pupillary portion may escape, necessitating its being dealt with separately before the lens can be extracted.

In many cases the wrapping of the iris over the knife can be avoided by carrying the point of the knife inwards and upwards at one sweep, so that almost the whole of the section is made by the belly of the knife and very little of it by the heel end of the blade; sometimes the whole of the section, and usually the greater part of it, can be completed by one sweep inwards and upwards of this kind, and the iris, which has shown a tendency to bulge over the edge, slips under it in a satisfying manner. This, of course, is a well-known manoeuvre and it is one I always make use of. Some surgeons lift the knife forwards and so get the iris to slip under it, but in some cases in spite of either of these devices it will get in the way.

If in such a case a repositor is taken in the other hand, right or left as the case may be, whilst the knife is in position, it will be found that by a stroking movement of the repositor over that part of the cornea which overlies the blade, the iris can be expressed from between the blade and the cornea, and made to slip under the knife, and so the section completed without damage to the iris. I have done this on many occasions and have very seldom found it to fail, even where it looked as if it were impossible to avoid buttonholing.

CRATER-LIKE HOLE AND COLOBOMA OF THE DISC ASSOCIATED WITH CHANGES AT THE MACULA

BY

DR. K. T. A. HALBERTSMA

DELFT, HOLLAND

THE presence of a hole in the disc constitutes one of the rarer congenital anomalies. Only some thirty cases have been published. von Hippel[1] points out that the association of this anomaly with any other congenital defects (conus, coloboma, atrophy) is still rarer. James[2] has published a case in which changes at the macula were present. His patient was a boy, aged six years, with a squint, so that no very accurate account of clinical symptoms attributable to the defect could be given.

Most writers on this subject do not consider that the mere presence of a hole at the disc gives rise to any symptoms. Any alterations in the visual field or in colour perception which may be present are to be attributed to other defects. The case I am going to describe shows that the association of a hole in the disc with changes at the macula may give rise to pronounced alterations in the visual acuity, the perception of colour, and the visual fields. This condition must be very rare, since, as far as I know, no similar case has been published.

Mrs. S., aged 38 years, consulted me with regard to a change in the glasses which she had been wearing for the last five years. An ophthalmic surgeon whom she consulted in 1918 had told her that her left eye was defective. She gave a history of a blow on that eye and stated that, after this, she first noticed that the eye was defective. The patient's mother, who had died three years previously had had a defective left eye from birth. There was no other personal or family history of any anomaly.

On examination : V.R. $= 8/10\bar{c} + 1D.$ sph. $= 10/10$. Visual field and colour perception are normal. V.L. fingers in the lower temporal quadrant, only the tips of the fingers being discerned in the upper temporal quadrant. The visual field for white (object 1 cm. in diameter) shows, with the ordinary perimeter (Fig. 1) and with Bjerrum's screen (Fig. 2), an absolute central scotoma as well as some relative scotomata in the upper and lower temporal quadrants (Fig. 2). The sense of colour is obviously disturbed; green is called pale blue and red is called pink. Blue and yellow are recognized as such, but the visual field for these colours is far smaller than that for white. The red and green fields are so small that it is difficult to fix them with any precision.

Ophthalmoscopic examination of the left eye shows that the nasal half of the disc is normal; the vessels issue from the centre of the

disc and run their usual course in the nasal half of the retina. The indirect view of the disc shows that the temporal half is occupied by a bluish-grey mass, close to the entrance of the blood-vessels, which resembles a cyst. Direct observation, however, shows (Plate) that the apparent cyst is really a crater-like hole with a diameter of about one-fifth that of the disc, clearly marked off from the surrounding white part of that structure. The bottom of the hole, which has a dark silver-grey colour is about 7-8D. below the level of the disc. The structure resembles the appearance

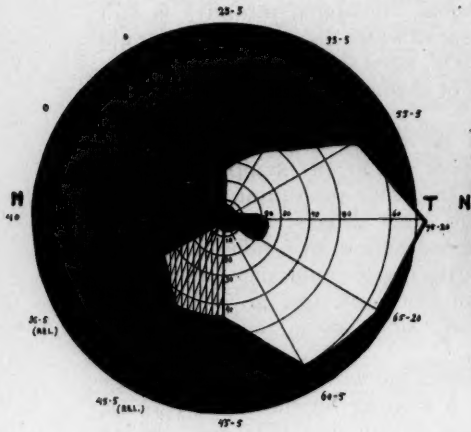


FIG. 1.

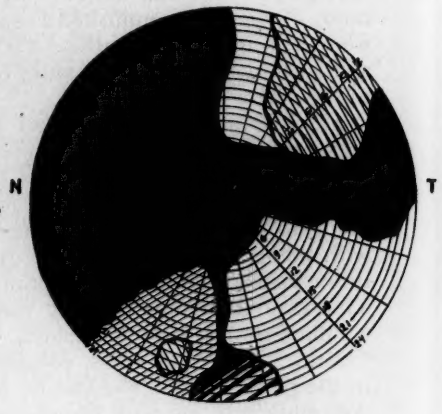


FIG. 2.

of the lamina cribrosa as seen in a disc with deep excavation. The temporal half of the disc is on a slightly lower level than the nasal half. At the upper and lower sides of the hole some very thin irregularly-shaped arteries are visible as red lines issuing from the temporal arteries; these end somewhat abruptly at the disc margin. Within the hole itself no blood-vessels can be seen. The sclera is visible at the temporal edge of the disc and is surrounded by heaped up choroidal pigment. In the area between the disc and the macula there are numerous small yellow spots with many irregular dots of pigment scattered between them (see Plate). The macula is represented by an indefinite orange-coloured spot about the same diameter as the disc. The periphery of the fundus is normal.

The crater-like hole is the most important of the appearances described above. Such holes are usually single and situated in the horizontal meridian of the temporal half of the disc. Cases have been published in which there was more than one hole. Wiethe[3] saw a case with one hole in each half of the disc. van

UNIV. OF MICH.

der Hoeve[4] described the case of a youth, aged 19 years, in whose right eye three holes were situated in a colobomatous disc. Two of these holes were in the upper and lower part of the nasal half of the disc and the third was in the upper part of the temporal half. The disc was represented by a large irregularly-shaped round white area of about nine times the diameter of a normal disc. The depth of the holes was about 5D. The blood-vessels issued irregularly, partly between the holes and partly at the outside of the disc. The visual acuity and the visual field for white were normal. The field for red, green, and blue showed a scotoma in the upper half. In the left eye there were colobomata of the iris, lens, choroid, and disc. The left eye had a squint, and in both eyes the cornea was smaller than normal. The colour of the holes was said to vary from dark grey to olive green, depending on the position of the ophthalmoscope, and their diameter was between one-eighth and one-third of a disc diameter.

The depth of the holes described shows considerable variation; thus Lichtenstein[5] describes a depth of 24D., and Carsten[6] one of 3D. As von Hippel[1] points out the emergence of a bundle of nerve or glia fibres may make the bottom of the hole invisible and so render any accurate estimation of its depth impossible.

Considerable differences have also been described in the relation of the vessels to the holes. Thus Wessely[7] described two cases, in one of which a cilio-retinal artery, and in the other an optico-ciliary vein issued from the hole; and Prediger[8] a case in which a cilio-retinal artery emerged between the two holes. In most cases, as in mine, no vessels are found in relation to the holes.

There is some difference of opinion as to the origin of the anomaly. The older authors (Wiethe, 1882; Stood, 1884; Remak, 1884; Szily, 1887; Reiss, 1908) on the whole considered the process to be a colobomatous one. Seefelder[9] in his account of a patient with coloboma of iris, choroid, retina, and disc on one side and a pronounced hole in the disc on the other, says that the anomaly can only be explained on the assumption of a coloboma at the entrance of the optic nerve, due to the protrusion of the retina at the temporal side of the disc. The description and figures of his article seem to show, however, that a cystic protrusion of the retina was present at the outside of the disc of the same nature as that found in microphthalmic eyes. This case and that of Lauber[10] are the only ones that have been examined anatomically. In the latter there was a cleft, prolonging the hole, which ran obliquely through the optic nerve towards the temporal pial sheath.

Wessely[7] thinks that these holes in the optic nerve form the entrance for blood-vessels which, either have not developed at all, or whose evolution has taken place too late; such vessels should originally issue from the posterior ciliary arteries. In

lower mammals the retinal vessels in general issue from these latter, and the same may occur, as an atavistic symptom in man. Since the vessels described issue, as a rule, from the temporal side of the disc, this theory fits in with my observations to a certain extent, but is opposed by the fact that in many of the cases no vascularization at all has been found.

A remarkable case has been published by van Lint and van Duyse[11] in which there were two symmetrically placed holes in both discs. In this case the vessels ran in a layer of retinal tissue which covered the holes in front. The visual acuity on the right side was 6/6 and on the left 6/10; both visual fields were of normal extent. The maculae and fundi were normal. The authors term the appearance that of cystic holes; a description supported by the glial or fibrous tissue that emerged from them and gave them the appearance of a cystic formation. They consider the process which gives rise to the formation of holes in the disc to be uniform with that which forms, according to Elschnig[12] the origin of colobomata at the entrance of the optic nerve, *viz.*, the protrusion of more or less developed folds of the retina in the disc itself or in its neighbourhood as a result of abnormal growth of retinal tissue at the margin of the secondary optic vesicle. According to the authors there is no essential difference between the holes in the lower half of the disc, the so-called typical ones, which may form the entrance to rather voluminous cysts and those which, as in my case, belong to the temporal half of the disc and whose infundibulum is rather short. The direction in which the growth of the retina takes place is of no essential interest; the dominating factor is that an abnormal growth of the retina takes place and forms folds which protrude in the disc or its immediate neighbourhood. The particular anomaly found, conus, scleral ectasia or hole in the disc, will depend on the way in which this process takes place. In accordance with this theory the authors speak of a colobomatous process which refers exclusively to anomalies of the disc.

Köhne[13] published a case of a hole in the disc associated with changes in the visual field. He considered that the existence of an absolute central scotoma of oblong shape in the horizontal meridian indicated that the papillo-macular bundle had been interfered with. This symptom and the fact that there was an obvious difference in the prominence and colour of the centre and of the surrounding parts of the temporal half of the disc led him to think it very probable that a coloboma of the disc was also present. As a matter of fact, however, if the author's view was correct, the central scotoma should run from the central point to the blind spot, and not as shown in the figure, from the central point to the nasal side. It is, therefore, more probable that the scotoma observed was due to some change either at the macula

or between the macula and the disc. The paper makes no mention of any such changes. The visual acuity was 6/18, and there is no mention of any alteration in colour perception. At the end of his paper the author points out the desirability of recording any case of coloboma of the disc associated with a hole, as the nature of the visual field in such a case might throw light on the course and function of the nerve bundles running from the retina to the corresponding part of the disc.

As a rule, when a hole in the disc is present, no other changes inflammatory or otherwise have been observed in the retina. Carsten[14] published a case with a paracentral scotoma corresponding to a retinal focus situated between the macula and the disc at about 1-2 disc diameters temporal from the disc. In the temporal half of the disc there was a hole about 3D. deep; this had given rise to no symptoms before the appearance of the retinal focus. The visual acuity then fell to 5/10, but later recovered to the original 5/8. No relation between the retinal focus and the hole was apparent.

If a hole is found in any other part of the retina, similar to the holes on the disc, no changes in the visual field may be found. Scarlett[15] observed a hole about two-thirds the diameter of the disc in the neighbourhood of the macula, about one and a quarter disc diameters from the disc. The visual acuity was 2/3 and there was no alteration in the visual field. The aspect of the hole was very similar to that of a hole in the disc; the floor was white; and the hole was sharply limited from the surrounding retina. The origin of it was unknown. I have also seen a similar case in a girl, aged sixteen years. A few years before I saw her she had been treated elsewhere for disseminated choroiditis of the left eye and swelling of the disc of the right. On examination I found in the left eye a small round white hole above and to the temporal side of the disc at a distance about one-half disc diameter. The visual field showed no alteration and the visual acuity was 5/20.

I believe that the changes in the fundus and functions of the eye in my case are best explained by the theory of van Lint and van Duyse[11] to which I have already alluded. On the assumption, according to this theory, that at the place where the hole in the disc is situated, *viz.*, the entrance of the papillo-macular bundle in the optic nerve, an abnormal growth of the retina has taken place, the anomalies of the disc and of the region between the latter and the macula may be explained. According to this view the changes at the macula are of a secondary character. Since the normal development of the temporal half of the disc has been interfered with by an abnormal growth of retinal tissue this part

of the disc has become colobomatous. In accordance with the theory this coloboma is an atypical one.

The fact that the mother of my patient may also have had a congenital anomaly of the eye lends some support to the theory of the colobomatous origin of the hole, as such defects are known to be frequently hereditary.

The disturbance of the functions of the eye can all be explained by the anomalies present in the fundus. The scotoma occupying the nasal half of the visual field and including the absolute central scotoma is apparently due to the coloboma of the temporal half of the disc and also to the changes observed between the disc and the macula. The disturbance in the colour sense is to be explained by the changes in the macula itself and in its immediate neighbourhood. The portions of the visual field which function correspond to the few remaining normal parts of the retina.

In the absence of any anatomical examination no other theory can well be suggested to explain all the facts observed. Possibly at some future date it may be possible to confirm the theory by direct microscopical observations.

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ON BITEMPORAL CONTRACTION OF THE VISUAL FIELD IN PREGNANCY

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I.—Introduction

IT is generally known that pregnancy may be the cause of many diseases of the eye. Among the morbid changes, which occur in the course of regular pregnancy, may be cited: ecchymosis of the lids and of the conjunctiva, accommodative and muscular asthenopia, hyperaesthesia of the retina and night-blindness. Besides these slight and fleeting disturbances, there occur in pregnancy serious diseases, such as inflammation of the cornea and the uveal tract, diseases of the retina and optic nerve.

The above-mentioned diseases which depend in the main upon conditions associated with pregnancy, namely upon disorders of nutrition and disturbances of the internal secretion, are rare complications of pregnancy. According to Winckel their percentage is 1.4 per cent., according to Bastide only 1.3 per cent. This category contains only those diseases which are closely associated with pregnancy, usually recurring in subsequent pregnancies and disappearing after delivery or abortion.

Up to the present time no constant changes in the visual apparatus in connection with normal pregnancy, such as those found in the hypophysis, suprarenal and thyroid glands, were obtained.

Bosse (1900) tried to show that 75 per cent. of all women in a normal pregnancy show some disorders of the optic nerve, such as congestion and oedema of the disc, but the observations of Bosse were not confirmed by the investigations of other authors, such as Sandmann (1901), Polte (1905), and Majewski (1910).

II.—Historical sketch concerning the bitemporal contraction of the visual field in pregnancy

In his research on visual fields in pregnancy Finlay (1922), as the result of 31 observations concluded, that "during pregnancy there often occurs as a result of the normal hypertrophy of the pituitary gland in connection with this state, a compression of the chiasma which manifests itself by changes in the visual fields in the nature of a bitemporal contraction."

Finlay's work, read at a meeting of the International Congress of Ophthalmology, Washington, April, 1922, awoke much interest among those present. In the discussion Maud Carvill stated that she also had examined the visual fields of 67 gravid women and found that 89 per cent. showed bitemporal contraction of greater or less extent. The contractions were more marked in multiparae.

For the sake of historical exactness I must add that bitemporal contractions of visual fields in pregnancy had often been observed before Finlay. Thompson (1901) noticed a case of bitemporal hemianopsia with optic neuritis in a young gravid person. Similar cases were published by Reuss and Nolen (1908); Bellinzona and Tridontani (1904) noted in 24 gravid women, with normal acuity of vision, changes in the visual fields in the nature of a bitemporal contraction, which increased as the pregnancy progressed and were more obvious in primiparae. The colour-fields were concentrically contracted. Postpartum all changes disappeared. Forti (1910) also noted in pregnancy a contraction of the field for white, and that the nasal part was less contracted than the temporal. These alterations appeared chiefly in primiparae but did not progress in the later period of pregnancy. The limits of the colour-fields showed some interlacing.

Bellinzona, Tridontani and Forti explained the disorders of the visual fields by vasomotor disturbances, similar to those occurring in hysteria.

Nevertheless the views of authors, concerning the existence of any contraction of the visual field in a regular pregnancy, were not all at that time, compatible, because Polte (1905) found quite different results, when in 12 cases of normal pregnancy he observed no trace of changes in the visual field. Berger and Loewy (1906) also rejected the possibility of the existence of such changes.

More careful studies on the question of hemianopsia in normal pregnancy date from Igersheimer (1916), after Finlay and Carvill published their works, explaining the changes described by the mechanical pressure brought to bear on the chiasma by the enlarged pituitary gland. This based the pathogenesis of hemianopsia during normal pregnancy on quite different foundations to those of previous authors. It is true that Nolen (1908), citing a case of his own, advised in certain diseases of the eye,

accompanied by alterations in the visual field in pregnancy, to take into consideration the lesion of the chiasma produced by the hypertrophic pituitary body. Reuss interpreted also in the same way the appearance of temporal hemianopsia in one of his patients in the course of the fourteenth, fifteenth, and sixteenth pregnancy; but these observations concerned only single and rare cases.

Finlay's investigations were repeated by Löhlein (1923) who confirmed in a series of 54 cases, in 78 per cent. the temporal contraction of visual fields in the last month of pregnancy. This contraction usually increases until the day of delivery and disappears on the tenth day after it. Defect for colours, especially for red and green, precedes that for white. The alterations appear more frequently in multiparae and in them the return to the normal state takes more time.

According to Löhlein the examination of the visual fields before delivery may give an idea of the degree of the hypertrophy of the pituitary gland. If it could be proved that there exists a dependency between the extension of the field contractions and the force of the labour pains, examination of the visual fields before delivery might indicate, so Löhlein thinks, whether the patient may expect normal, feeble, or strong pains.

Prompted by Professor Szymanski I have examined in the Obstetrical Clinic of the University and the Obstetrical Department of the District Military Hospital in Vilno, a series of visual fields in pregnant women.

While I was engaged in this research observations were published by Schöninger, Holm, Stargardt and Schall, Beckerhaus, Metzger, and Richter contradicting the results of previous authors. The work of Schöninger was founded upon 24 cases of normal pregnancy, that of Holm upon 45, Stargardt and Schall upon 58, Beckerhaus 150, Metzger 56, and that of Richter's upon 81 cases. All these investigators found in only three cases slight bitemporal contractions of the visual fields. Meantime de Schweinitz (1923) and Lloyd Mills (1924) confirmed the existence of the changes in the visual fields as described by Finlay and Carvill. Ashikaga (1924) agrees with the opinions of Finlay and Löhlein, basing his belief on 20 cases. He adds, however, that his measurements demonstrate more contracted limits of the visual fields in primiparae.

III.—Technique

One of the main causes of this striking contradiction in the views of the investigators is the diversity and inaccuracy of the investigation of the periphery of the retina in general. Although the question of uniformity of the perimetry is of great importance nevertheless definite results have not yet been obtained. Taking into consideration the imperfection of perimetry, I started, when

elaborating the technique of my inquiries from the foundation that the measurements should be, as far as possible, in uniform conditions of illumination, contrast, visual angle, and other factors having preponderating influence on the size of the visual field.

In my investigations I made use of Förster's perimeter, for as it is known (Brudzewski, Comberg, Peter, de Schweinitz) this instrument is the most satisfactory for investigating the functions of the peripheral parts of the retina, and therefore to record the contraction of the outer limits of the visual field, which is the subject of my investigation.

The perimeter in use had a radius of 300 mm., 180° in extent; the breadth of the dead-black arch was 7.5 cm., the diameter of the fixation carrier 1 cm., the diameter of the test-object for white (as a rule) 5 mm., then the visual angle 5/300; the colour tests were 10 mm. in diameter; all tests were circular and they were moved by hand. Test-objects of various sizes (3 mm., 5 mm., 10 mm.) were also used. I did not make use of the self-registering instrument on account of its defects: (1) the motion of the sliding object is usually accompanied by a murmur; (2) the patient first sees the projecting edges of the carrier; (3) the black colour of the carrier wears off after long use, and consequently confusing reflections appear.

The manual moving of the test-object has also this advantage, that by turning the long handle quickly (while the test is attached on one side of the dark cartoon disc attached to the handle) we have the possibility of determining whether the patient really sees the test-object without having his attention turned to it.

In order to detect the early symptoms of lesion of the chiasma, that is the slight contraction outward and upward, Walker, Cushing and Hill recommend the use of a very small test-object of 0.3 mm. in diameter. Hess and Kölner, however, consider that, when using such a small test in the examination of the peripheral limits of the visual field, pseudo-contractions appear, which can with difficulty be distinguished from real ones. The local adaptation of the retina (*Lokaladaption*) and the formation of false scotomata and contractions depend upon the facts that very small tests become invisible in the peripheral parts of the visual field, unless moved with great speed.

The movement of the white test (the coloured test will be described later) was carried out at medium rate from without inward. It is known that too slow a movement of the test fatigues the eye and causes the local adaptation, while too fast a movement renders the eye insensible to the test-object. The movement of the test-object was a steady and even one.

In discussing the rapidity of movement of the test I cannot pass over in silence the work of Kestenbaum (1924), concerning

peripheral perimetry. Kestenbaum stated that the eye perceived in the most peripheral circumference of the visual field only the motion of the test-object, but not its white colour. If the test being in the limits of "sensation of motion" is not moved, it will become imperceptible, when it is in the limits of white sensation then, even in the absence of movement, it is perceived. In normal cases the difference between the respective boundaries when using the middle-sized tests, possesses no clinical meaning, on the contrary, in pathological cases there appears a rather considerable dissociation between these limits. In several cases of normal pregnancy I observed the visual field in the above-mentioned way and consequently the difference between the limits of "sensation of motion" and "sensation of white," reached from 5° to 10°. In testing the field for colour saturated colours were used. The movement of the test was performed centrifugally, quickly and steadily, because according to Hess, unequal and too slow a motion of the coloured test would cause the above-mentioned local adaptation. The patient did not know beforehand what colour was coming. The results were only noted when the patient perceived the right colour. I made my observations with red and green and in diffused daylight. Only persons with normal colour-sense were examined.

Engelking's colour test-objects as previously used were found to contain impure colours, so that with them the boundaries for the red and green are much contracted. The recognition of saturated colours is easier, and particularly that of the gradual transformation of a saturated colour.

The measurements of the visual field were made in diffuse daylight in a room having a large window which looked to the north. Many a time I have been obliged to make my observations at night by an electric lamp (100 volt), placed behind the head of the patient in such a manner that the arm of the perimeter might be equally illuminated in all meridians. In all measurements I took care that the line uniting the eye of the patient with the centre of the perimeter should run strictly horizontally, as this has a marked influence on the extension of the vertical meridians of the visual field. I also paid attention to the prevention of lateral movements of the patient's head, as any neglect of this considerably alters the boundaries in the horizontal meridians of the visual field. During the tests I stopped for a few minutes to rest the patients, as the tests being of relatively long duration, would weary them, the more so since women at the termination of pregnancy are easily fatigued.

Before examination of the second eye I made a longer pause so that the eye, which had been occluded, might be adapted to the illumination.

To avoid fatigue I tested only in eight meridians. Habitually I began my tests in those meridians in which I expected the least changes, passing on to more careful measurement of the most threatened meridians, *viz.*, up--outwards, because it is here that the earliest changes of the visual field, in cases of a compression of the chiasma by the enlarged pituitary gland make their appearance (Cushing, Wilbrand and Saenger).

In noting the results of my observations in recording the limits of the visual field, I made use of the method suggested by Uribe Troncoso, founded on the principle of always considering the subject in front of the observer, his right side facing the left hand of the latter. Among others this method facilitates the marking and the interpretation of the findings.

In order to compare the results of the visual field as observed in pregnancy with physiological limits I made measurements in ten cases of nulliparae.

Contractions of 5° were considered to be within the physiological, especially with concentric contraction and when examining with colour-tests. All observations were made by myself.

IV.—Results

I have examined the visual fields of 81 patients in the last month of pregnancy. The tests were frequently taken on the actual day of parturition. In those cases in which I found contractions I made further investigations on the ninth day after delivery. Forty-six of these persons were primiparae: 19 were in their second pregnancy; 10 in their third pregnancy; 2 in their fourth; 3 in their fifth; and one was in her twenty-third pregnancy. These women were of good intelligence and between 19 and 43 years of age.

The results of my investigations are as follows: in two cases (the twenty-third and fifty-eighth) I found a slight temporal contraction for white and in one of these cases (the twenty-third) only on the right side.

The twenty-third case, 2nd pregnancy: (the location of the meridians of the perimeter chart is so arranged that the zero is placed at the nasal extremity of the horizontal meridian in each eye and the degrees are counted on the upper semicircle to 180° at the temporal extremity) in the meridian 120° at 55°; in the meridian 150° at 65°; temporally outward (meridian 180°) at 80°. The boundaries for green were found on this side concentrically contracted. The fifty-eighth case, 3rd pregnancy: bilateral contraction of 10° out-upward for white on both sides. Three times (the fourteenth, fifty-third, and fifty-fourth cases) I found a temporal contraction only for coloured test-objects, namely: the fourteenth case, 3rd pregnancy, for red outward, 30°; for green

outward, 10°. The fifty-third case, 1st pregnancy; change in the nature of a temporal contraction (outward, 15°) for green on both sides.

The fifty-fourth case, 1st pregnancy: temporal contraction for red and green only on the left side. For red outward, 30°; for green outward, 10°.

In one case (fiftieth) there appeared a concentric contraction for red and green, and in the forty-sixth case there was a relative scotoma for green.

Many authors (Birch-Hirschfeld, Comberg, Ferree and Rand, Foucoult, Gleb and Goldstein, Hess, Kleinsasser, Simon) state that there exists in a great many normal eyes scotomata, particularly in the peripheral areas of the visual field and especially after a certain fatigue of the retina. The change in the forty-sixth case can be reckoned with the so-called "physiological." If I do not count the fiftieth case with concentrical contraction for coloured tests, which I must treat with the greatest circumspection, there will remain as a result of my observations five cases with slight temporal contractions of the visual fields.

The above-cited alterations appeared twice in primiparae (on 46 observed primiparous gravid women); once in the second pregnancy (on 19 women in the second pregnancy) and twice in the third pregnancy (on 10 women).

The visual field returned after delivery to its normal state in five cases (the twenty-third, forty-sixth, fiftieth, fifty-third, fifty-eighth). In two cases further observations could not be made. The above-mentioned contractions, observed in my five cases, might be considered as a sign of fatigue of the eye, or as a stigma hystericum, which occurs, as well as other hysterical disturbances in the last period of pregnancy, for according to Rönne, in hysteria the possibility of finding various forms of the visual field, including even hemianopsia, must be taken into consideration (Hippel, 1925).

Nevertheless, from the observed alterations in the nature of a bitemporal contraction and from the normal hypertrophy of the pituitary gland during pregnancy, the *possibility* only of a compression, though not in numerous cases, of the chiasma in pregnancy by the enlarged pituitary gland, as manifested by changes in the visual fields must be considered.

As is known, the hypophysis in pregnancy undergoes only in its anterior part any considerable anatomical and functional change. According to Bumm and Seitz the augmented function of the anterior glandular part of the hypophysis is in connection with hypertrophy of the matrix and often occasions in pregnancy acromegalic changes in the face, hands and feet. Various observers long ago surmised that the pituitary was enlarged in pregnancy (Comte, Launios and Mulon, Morandi, Querrini,

Cagnetto). The above question is treated by Erdheim and Stumme (1909) with great minuteness. As Erdheim and Stumme assert, the average weight of the pituitary gland in nulliparae between 21 and 40 years of age, is 61.8 cg.; its size in transverse measurement (breadth) is 14.4 mm.; in antero-posterior sagittal measurement (thickness) 11.5 mm.; in vertical measurement (height) 5.9 mm. In women in their first pregnancy the figures are as follows: weight 84.7 cg., breadth 15.6 mm., thickness 11 mm., height 7.5 mm. The figures in multiparous women are respectively: weight 106 cg., size 17.5; 11.0; 8 mm.

From the fourth month of pregnancy the pituitary gland begins gradually to increase in weight and size, and several weeks after delivery it begins to diminish. The increase of the hypophysis is more marked in multiparae. In comparing these figures it is seen that the overgrowth of the hypophysis takes place only in transverse and vertical measurements (in the last only imperceptibly) while the sagittal diameter remains unchanged on account of the existing obstacles from the bones. As Zander (1897) maintained there exists between the operculum sellae and chiasma a cisterna chiasmatis 1-2.5 mm. in height, so the pituitary must at least increase 5 mm. in height to exert any compression on the chiasma. In several investigations of Erdheim and Stumme such increase took place in multiparous women. As a result of their own investigations Erdheim and Stumme came to the conclusion that during pregnancy the compression of the chiasma cannot be considered as normal. In exceptional cases, such as a high situation of the hypophysis, a flat sella Turcica, or an enlarged cyst of Rathke and considerable increase of the vertical measurement of the hypophysis, a compression of the chiasma may occur in pregnancy.

There has, recently, appeared a work by Parsons Schaeffer (1924) concerning the anatomy of the chiasma, throwing much light on the question of hemianopsia in pituitary tumour and assisting to clear up the problem. From Parsons Schaeffer's investigations it is noted that the visual phenomena in connection with the diseases of the hypophysis are not always an early symptom, and, though bitemporal heminanopsia is the most common visual field defect disturbances of quite another kind appear, sometimes an absolute want of visual changes, above all in the first period of the disease, when the chiasma not being fixed to the base of the skull, yields to compression. According to Parsons Schaeffer, whenever in those cases the chiasma lies behind the dorsum sellae (in 4 per cent.), or when its small part is to be found in front of the dorsum (in the majority of his cases) tumours of the pituitary gland may attain great dimensions and make their way between the optic nerves, and yet may exert no pressure on the chiasma.

Considering particularly the question of the hypertrophy of the pituitary in pregnancy it would appear from the investigations of Erdheim and Stumme, that compression can only appear in isolated cases. Ashner (1924) agrees with the opinion that the hypophysis rarely attains in pregnancy such a dimension as to produce a compression of the chiasma.

Individuals with a special susceptibility to disturbance of the endocrine glands are particularly liable, in pregnancy, to such disturbances, as, for instance, in the case of Gross (1924) when, after delivery a complete bitemporal hemianopsia accompanied by "*distrophia adiposogenitalis*" appeared, or that of Frankl (1925), when in the seventh month of pregnancy a transitory amaurosis with acromegaly occurred.

Returning to my own observations I must note that in contradiction to the results of Finlay, Carvill, Löhlein and Ashikaga, I have only found in a few cases of pregnancy temporal contractions of the visual field. Even in the eighty-first case (twenty-third pregnancy) I failed to find any alterations of the visual field. The examination with the Röentgen rays demonstrated no changes in the sella Turcica. The case of twenty-third pregnancy merits attention in this respect, that it concerns a patient in whom four months previously a thyroidectomy had been performed. Experimenters with thyroidectomy, performed on animals, (Stiede, Gley, Biedl, Simpson and Hunter) have observed that as a consequence of these experiments a considerable hypertrophy of the pituitary gland often arises, which might show itself in men by corresponding changes in the visual field, although this did not take place in my case. It is possible that the relatively short time that elapsed from the operation may account for this, though my observation is in accordance with that of Kranz (1925).

I also desire to comment on the question hinted at by Löhlein, as to the possibility of the existence of a proportional relation between the degree of the hypertrophy of the pituitary gland and the strength of the labour pains.

The comparison of the results of my inquiries on the visual field with the strength of the labour pains appears from my material as follows:

	Normal visual fields.	*Temporal contraction.*
Feeble pains	17	1
Middle	23	3
Strong	31	1

The examination gave negative results. Holm obtained the same results.

V.—Conclusions

I consider that as a result of my observations I am justified in making the following conclusions.

(1) The manner of clinical investigations of the visual field at present in use, being a subjective method, is therefore affected by numerous physical defects and errors (illumination, colour-tests, the contrast and the size of the object), which must be taken into account in the interpretation of the results.

(2) In few cases of normal pregnancy (6 per cent.) there occurs in the last month of pregnancy a slight temporal contraction of the visual field, which may be occasioned by the hypertrophy of the pituitary body.

(3) On the tenth day after delivery the visual field returns to its normal state.

(4) I did not find any relation between the appearance and extent of the field contractions and the strength of the labour pains.

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ANNOTATIONS

The present arrangements regarding Ophthalmic Benefits under the Insurance Acts

Readers of this journal will probably remember that as the outcome of a conference held at the house of the Royal Society of Medicine in May, 1924, between representatives of the Council of British Ophthalmologists and of the British Medical Association, a joint committee was appointed to consider the administration of "optical benefits" under the National Insurance Act. This committee drew up a series of recommendations which are published in Vol. VIII, page 590 of this journal. These recommendations after receiving the approval of the Council of British Ophthalmologists, the British Medical Association, and the Ophthalmic Benefits Committee, were forwarded to the Ministry of Health with which prolonged negotiations ensued, the result being that the term "optical benefit" has been altered to "ophthalmic benefit." According to a communication addressed to the British Medical Association by the Ministry on October 8, 1926, the normal procedure for the administration of this "ophthalmic benefit" is now as follows:

"An insurance practitioner is required, if the condition of one of his patients is such as to require ophthalmic treatment not within the scope of his agreement with the Insurance Committee, to furnish the patient with a signed written recommendation that such treatment should be obtained. The patient then hands the recommendation to his approved society and applies for ophthalmic benefit, which request, if granted by the society, can only result in the patient being instructed to consult any one of the practitioners upon the Association's list of ophthalmic surgeons who have expressed their willingness to treat insured persons at the fee of one guinea. At the same time the society must furnish the patient with some written authority for production to the ophthalmologist at the outset of the consultation which shows that the

society undertakes to defray the ophthalmologist's fee of one guinea."

Though the above arrangements are good so far as they go they do not provide satisfactory ophthalmic treatment for all insured patients who require it. The "ophthalmic benefit" is not yet a "standard benefit" available to all insured persons throughout the country; only those are entitled to receive it who are members of approved societies having surplus funds, which agree to give the benefit, after having received the sanction of the Ministry of Health. Even then the member must have been attached to the society the whole of the time whilst the surplus has been accumulating.

It has already become apparent that some of the societies which have adopted the benefit are not administering it strictly in accordance with the intentions of the Ministry of Health. Some of the officials protest that their societies are unable to pay an ophthalmic surgeon's fee in all cases and adopt the dangerous practice of sending some of their members direct to opticians. Such societies naturally find a difficulty in deciding which cases to send to ophthalmic surgeons and which to opticians, and forms have been issued by them in which the insurance practitioner is invited to make this decision, a responsibility which, if wise, he will seldom undertake.

Obviously, the whole matter of the administration of ophthalmic benefits still requires vigilance and careful consideration. It is very desirable that the joint committee of the Council of British Ophthalmologists and the British Medical Association, which has already accomplished so much, should be resuscitated to carry on still further its useful work.

The Welfare of the Blind

Ophthalmology is primarily concerned with the prevention and not with the treatment of blindness. Unfortunately our efforts are not always crowned with success, hence the care of the blind becomes a subject of interest to all of us. The great war, by adding numbers of intelligent and, apart from their blindness, sound young adults to the ranks of the blind, brought about considerable improvements in the methods of educating them, not only to be self-supporting, but also to share in many enjoyments previously denied to them. Amongst the latter, Braille, as applied to literature and music, takes the first place.

The most important Braille library is that of the National Library for the Blind, with headquarters in London and a Northern branch in Manchester. The library was founded in 1882 by a

blind lady and a friend. The few books they and their friends were able to produce by hand were lent out at a charge of a penny per week. At the present time the library (free to all blind readers) contains nearly 106,000 volumes at headquarters in Westminster and 15,000 in Manchester. These figures represent about 10,000 books. The catalogue includes a wide range in fiction, theology, science, sociology, poetry, foreign literature, and music. The circulation of books to all parts of the kingdom and to the oversea Dominions is very large: in 1925-6, 137,285 volumes were sent out from headquarters, and 47,651 from Manchester.

Increased accommodation for the library is urgently needed and the Committee are, for the first time, appealing to the public for funds to complete an extension of the building now in course of erection.

Another library on a smaller scale is in process of formation by the National Institute for the Blind. The books and periodicals produced by the Institute are either given away free to individuals and libraries or sold at a reduction of two-thirds or three-quarters of the cost price. The Institute has decided to think Imperially and to extend these terms to all parts of the British Empire. The students' library is of special value. No matter how abstruse a work may be, provided it is required for the studies of a single blind student, the Braille copy is produced with all speed and loaned to that student for as long as he needs it. In this way a library of over 4,000 volumes has been built up, mainly by the devoted work of volunteers, and these books are available to every *bona fide* student.

Valuable though the library of the Institute may be it is one of the less important of its many activities. The provision of home-work and of convalescent homes for the blind has a very practical value. Further, an amicable arrangement has now been reached between the National Institute, the local voluntary agencies, and the local authorities concerned with the administration of the Blind Pensions Act, whereby it is hoped that the many petty jealousies which have hampered work for the blind in the past may disappear. All those interested in the beneficent work of the Institute should obtain a copy of the last, profusely illustrated, report.

Our readers may feel confident that any subscriptions they may be the means of obtaining will be put to the best use by both these institutions.

ABSTRACTS

I.—COLOUR VISION

(1) **Dufour, M.—The use of coloured filters and colour vision. (L'emploi de filtres colorés et la vision des couleurs.)** *Ann. d'Ocul.*, Vol. CLXI, p. 801, 1924.

(1) **Dufour** reports a case of a laboratory assistant who was colour-blind, who by much perseverance was able, with the help of colour filters, to reproduce with paints a coloured drawing almost perfectly. A preliminary attempt, made with the naked eye, is reproduced and shows confusion of reds and greens, whereas the painting produced with the help of colour filters is almost exactly like the original. The filters used were of common coloured glass, red, green, yellow, and blue. The colours of the original painting were studied and compared with the pigments used with the help of the colour filters. The principle is clear when it is understood that to a colour-blind person, who confuses reds and greens, the colour red will appear darker than the colour green when viewed through a green filter and *vice versa*. The coloured reproduction should be examined, in order to convince one that it is possible for a colour-blind person to reproduce delicate differences of shade, and tint of colour.

HUMPHREY NEAME.

(2) (a) **Verrey, A. (Lausanne).—Some further notes on the examination for colour perception in connection with the (Swiss) Federal Railways. (Quelques notes encore sur l'examen de la perception des couleurs et les chemins de fer fédéraux.)**

(b) **Koby, F. E. (Bâle).—A note on a new anomaloscope. (Note sur un nouvel anomaloscope.)** *Rév. gen. d'Ophtal.*, April, 1926.

(2) These two articles, by **Verrey** and **Koby** respectively, hang together. In the first, certain details in the use of the anomaloscope, the apparatus selected for the investigation of colour vision on the Swiss railways, are considered, while in the second a description is given of a new anomaloscope based on the same principle as that of Nagel's well-known instrument. The latter it may be recalled depends upon the comparison of two adjacent zones of colour, one being, for instance, sodium-yellow and the other a variable mixture of thallium-green and lithium-red. By means of a prismatic arrangement these two regions of colour may be equalized by the candidate or examinee. On the mixture of colours

which the candidate selects to render the colours of the two zones equal in his opinion, depends the estimation of his colour normality or otherwise.

ERNEST THOMSON.

(3) **Verrey, A. (Lausanne).—Anomalies of the colour sense and the anomaloscope. (Anomalies du sens des couleurs et l'anomaloscope.)** *Rev. gén. d'Ophtal.*, May, 1926.

(3) In this article, complementary to the one published in the April, 1926, number of the *Rev. gén. d'Ophtal.*, **Verrey** considers the making of a diagnosis of the species of colour defect by means of the anomaloscope. The article is one which should be read in the original by those interested in this instrument—which is probably in much greater use on the Continent of Europe than in this country.

ERNEST THOMSON.

II.—OPTICS AND REFRACTION

(1) **Levinsohn, Prof. G. (Berlin).—Notes on the genesis of myopia.** *Arch. of Ophthal.*, September, 1925.

(1) **Levinsohn** brings forward an interesting theory with regard to the causation of myopia. In the first place he discards the idea that it is due to increase of intraocular pressure caused by convergence or accommodation for two reasons: (1) That experiment has failed to show any increase of pressure under these conditions; (2) that the lamina cribrosa is not cupped in myopes although it is the weakest part of the ocular tunic and should therefore be the first to yield to any increase of pressure. He is of opinion that it is the bending of the head and body which is responsible for the condition and brings forward the following reasons: (1) With the head bent forward, congestion and gravity tend to draw the eyeball out of the orbit. As the eyeball essentially represents an extensible bag filled with water, an extension of the ball must be the result of the above-named movement; (2) "the pulling of the external coat will naturally work on the place where the eye is fastened to the optic nerve." As the optic nerve runs from the nasal to the temporal side, the gravity of the eyeball mobilizes forces which (*a*) cause an extension of the eye in the sagittal direction; (*b*) affect the temporal margin of the optic nerve; and (*c*) tend to displace the nerve entrance to the nasal side thus forming the myopic crescent, etc. The extensibility of

the muscles is too great to allow them to work effectively against the falling forward of the eye. Now Weiss has shown that the nerve is straight during convergence, and can therefore exert this pulling effect. In proof of these suppositions, the author states that an artificial myopia can be produced in monkeys by maintaining the sagittal axis of the eyes in a vertical position, over a period of several months. The concluding paragraph of the paper is: "the proof that in cases of myopia the extension of the eye is caused chiefly by the bending of the body and the head, is so clear that it is high time to draw the obviously important hygienic conclusions from this fact."

F. A. WILLIAMSON-NOBLE.

(2) **L. Müller (Vienna).—The pathogenesis and treatment of myopia and its consequences. (Ueber Pathogenese und Behandlung der Kurzsichtigkeit und ihrer Folgen.)** *Wien. klin. Wochenschr.*, March 18, 1926.

(2) In this paper **Müller** takes up a new attitude towards the development of myopia. His chief thesis is that all myopia is preceded by a divergence of the optic axes, this divergence being caused by an abnormality in the formation of the orbits, which results in a pressure plane developing between the two oblique muscles. He points out that the superior oblique, from the trochlea to its insertion on the globe, forms a definite tendinous band which must press upon the globe, especially when the inferior oblique is acting at the same time. He maintains that these two muscles are brought into strong action in the convergence necessary for near work, and that it is this pressure which is the main cause of the development of myopia.

He reports many cases of the higher degrees of myopia in which fundus changes were developed, which he treats by a tenotomy of the oblique muscles, and maintains that he has not only seen a diminution in the extent of the myopia, but also an improvement in the macular changes, and an increase in the visual acuity.

This paper gives no description of the operations used, nor of the exact kind of cases which he would regard as suitable, but he promises a complete description in some ophthalmological journal.

A. H. LEVY.

(3) **Sedan, Jean (Marseille).—A note on the action of homatropin in the severe progressive myopia of childhood. (Note sur l'action de l'homatropine dans les myopies graves progressives de l'enfance.** *La Clin. Ophtal.*, April, 1926.

(3) **Sedan** refers graphically to the number of "sterilized intellects" brought about by inability to see and understand by

reading. He discusses continuous atropinization and its great drawback as ordinarily associated with complete cessation of studies, and refers to removal of the lens, to pressure massage, suction massage, tenotomy; all treatments employed in the past. The author admits and agrees that accommodative rest is required, but why continuous rest by atropin, he inquires? Why not temporary rest by homatropin? In fact his treatment consists in two instillations of homatropin per week with, of course, the proper optical correction: a "bi-weekly barrage" he calls it. Sedan claims that by this means he had quite as good results as with atropin, and with much less inconvenience. The plan is possibly quite a good one, but it would take a great many more cases than the 54 mentioned by the author to carry conviction that any one method is better than another in the treatment of such an extremely fluky condition as the myopia of childhood, where some cases go on for ever increasing and others stop dead—as one may say—when a certain point has been reached.

ERNEST THOMSON.

(4) **Duane, Alexander (New York).—Are the current theories of accommodation correct?** *Amer. Jl. of Ophthal.*, March, 1925.

(4) The aim of **Duane's** paper is to emphasize certain clinical facts which invalidate the correctness of deductions from the theory of Helmholtz. The theory states that the action of the ciliary muscle is to relax the suspensory ligament of the lens, allowing the latter to expand by reason of its own elasticity. The elasticity diminishes throughout life but the contractile power of the ciliary muscle, it is believed, remains fairly constant. In other words the physical accommodation shown by the number of dioptres of manifest accommodation, continually diminishes, while the number of myodioptres or amount of ciliary energy, remains the same. Now consider three subjects, aged respectively, ten, thirty-two, and forty-five years. Each has at his disposal 18 or 20 myodioptres. The boy, aged ten years, when urged to the utmost effort can use 16 or 17 of these, and has, therefore, only two or three latent. The man of thirty-two, can at his utmost exert 9D. of accommodation so has at least 9D. latent, and the man of forty-five can exert only 3 or 4D., and thus has some 15D. latent. The boy, when using 16D. of accommodation is working near the limit of his muscular power, while the men, when accommodating to their utmost, are well within the limit. In the latter, therefore, there should never be an inability to accommodate to their manifest maximum. It is found by experiment, however, that the accommodation power fluctuates rather considerably from time to time in middle-aged subjects and

not much in children. Again, the effect of homatropin is to produce a gradual paresis of the ciliary muscle which usually takes an hour or more to become complete. The greater the number of latent myodioptres, the longer it should take for the production of any change in the accommodation power. It is found in practice, however, that the effect of homatropin is more quickly manifest in, say, a man of forty than in a boy of ten. These facts are inexplicable on the Helmholtz theory unless one assumes that the ciliary energy diminishes with age, and proportionally with the manifest accommodation.

If the ciliary energy be supposed to remain constant throughout life, we have to assume—from the result of experiments—that a man of 45 loses 86 per cent. of his total ciliary energy within fifteen minutes of the instillation of homatropin while a twelve-year-old girl in the same time loses only about 20 per cent. The discrepancy vanishes entirely if the power of the ciliary muscle be considered as diminishing *pari passu* with the manifest accommodation. An alternative explanation is afforded by Tscherning's theory, where accommodation is said to be due to active compression of the lens, so that, the harder the lens the greater the ciliary energy required to produce a given alteration in its curvature.

F. A. WILLIAMSON-NOBLE.

(5) **Kapuscinski, W. (Poznanie).—On the synergy of the accommodative mechanism in the two eyes. (Sur la synergie du mécanisme de l'accommodation dans les deux yeux.)** *Rev. gén. d'Ophtal.*, March, 1925.

(5) **Kapuscinski** contributes some personal experiments on the vexed question of the possibility of unequal accommodation in the two eyes. Donders, Hering, Schweigger, and von Graefe have denied it, while v. Hess has written strongly in the same sense. Fick and others have concluded that unequal accommodation can take place. The author of this article has devised an experimental method (which should be read about in the original) and seems to conclude that it is possible to make an individual accommodative effort with each eye, but that the process is by no means pleasant, leading to lacrymation, pain in the eyes, and headache. His experiments on himself do not touch the problem of anisometropia, but he does not think it probable that in this condition individual accommodation takes place in view of the very great difficulty of interfering with the *liaison* of the two accommodative mechanisms.

ERNEST THOMSON.

(6) **Clarke, Ernest (London).—The eye as an index to age.** *The Practitioner*, April, 1924.

(6) **Ernest Clarke's** paper is based on about 10,000 records of the accommodative power of patients: "Care was taken to exclude all cases where disease was present in the eyes, and when vision was worse than 6/9, and all had binocular vision."

The distance correction in everyone under 45 was worked out under a cycloplegic and in consequence, the amplitude of accommodation in these patients was found to be higher than in Donders' series, where latent hypermetropia was not excluded. It is interesting to note that the results in myopes are the same as in hypermetropes, which proves that it is the changes in the lens and not in the ciliary muscle which are responsible for diminution in power of accommodation. Clarke regards defective accommodation as an important index of premature senility, and finds that it is frequently associated with arterio-sclerosis, premature grey hair, and arcus senilis. While admitting the importance of alimentary toxaemia in bringing about this condition he has "not the least doubt that one of the causes is eyestrain." A man of 50 whose accommodative power and general appearance show him to be really 67 or 68, can by wearing a suitable pair of bifocal glasses and attending to his general health retard the sclerosis of his lens so that ten years later he may be only a year or two older in reality. Thus premature ageing of a patient indicated by lowered power of accommodation may be the first and only sign that something is wrong, and becomes a valuable guide and danger signal.

F. A. WILLIAMSON-NOBLE.

(7) **Landolt, Marc (Paris).—The visual axes in fish. (Les axes visuels des Poissons.)** *Arch. d'Ophtal.*, January, 1925.

(7) In his remarkable work on "accommodation in the eyes of fish," published in Pflüger's Archives in 1894, Beer advances his hypothesis as to the way in which this is effected. **Landolt** discusses the question and, believing that Beer's explanation is incorrect, suggests another which in his view is more probable. No proof of the truth of either can be adduced. In this short paper Landolt reproduces some of Beer's original illustrations and they help the reader materially. The lens in fish is approximately spherical, and accommodation by alteration of its curvature is impossible. Accommodation is effected by displacement of the crystalline lens backwards towards the retina. The process is the converse of that occurring in animals who live in air: instead of focusing for near objects an eye adapted for distance, accommodation in fishes focuses for distance an eye which is myopic when at rest. The retraction of the lens during accommodation is not

directly backwards, it is also drawn to the temporal side. In Beer's opinion the lateral displacement of the lens renders possible the focusing of rays reaching the eye in different axes, on the central portion of the retina, the situation, he thought, of a centre for orientation. Landolt suggests that this is an erroneous hypothesis. He argues that when the lens is displaced laterally the rays reaching the eye in one axis only are undeflected: they pass through the displaced lens and are brought to a focus on a part of the retina situated far on the temporal side. The image formed here enables the fish to become cognizant of objects directly in front, the position in which it is most important for the animal to see, for both commissariat and defensive purposes. The opposing hypotheses are readily intelligible by the aid of the illustrations reproduced from Beer's original paper.

J. B. LAWFORD.

(8) **Morton, J. J.—The menace of poorly fitting spectacles in old people.** *Jl. of Amer. Med. Assoc.*, February 28, 1925.

(8) Although it has been known for many years that chronic irritation plays a part in the localization of malignancy, little attention has been called to the mechanical injury caused by spectacles. **Morton** has reported three cases of basal-cell cancer caused by ill-fitting spectacles on the temples or behind the ear. They were all cured by the application of radium.

A. F. MACCALLAN.

III.—PATHOLOGY

(1) **Fuchs, Ernst (Vienna).—On the anatomy of endophthalmitis. Zur Anatomie der Endophthalmitis.** *Arch. f. Ophthal.*, Vol. CXV, 1925.

(1) This article is supplementary to a paper written by **Fuchs** some twenty years ago in which he first proposed the term endophthalmitis: he here confines his observations to inflammation of the ciliary body, and shows from a study of enucleated eyes how its situation varies according to the point of origin of the active toxins.

The inflammatory changes in the ciliary body are classified into three groups:

(1) Where the ciliary body is affected throughout.

(2) The ciliary processes are either exclusively or mainly the site of inflammation.

(3) The orbiculus shows greater changes than the ciliary processes, which often escape entirely.

Group (1) comprises the majority of the eyes with acute endophthalmitis that come to enucleation, because, even in the cases where the inflammation involves only a part of the ciliary body, it ultimately invades the whole as it increases in intensity. Among the eyes that are excised for a past endophthalmitis the greater number are those in which the remains of the inflammation affect only the anterior, or the posterior, portion of the ciliary body of this class. The cases forming group (2) are the least numerous. In them the inflammation is due to toxins coming from the region of the anterior chamber. These toxins can pass into the posterior chamber only through the pupil, which forms a mechanical obstacle to the diffusion backwards even when there are no posterior synechiae, while another obstacle is provided by the flow of aqueous from behind forwards. In the posterior chamber the inflammatory exudation diminishes when traced from before backwards because the further diffusion of the toxins backwards is rendered more difficult by the diminished size of the orbicular space and the closer union between the vitreous and ciliary body. In cases of corneal ulcer the anterior chamber is always the starting point of the toxins, but Fuchs shows why this does not hold good in the majority of perforating wounds of the cornea.

Two examples are cited showing the action of copper salts from aseptic foreign bodies on the ciliary body—a proliferation, rather than inflammation, in the orbiculus more than in the ciliary processes—an action the reverse of that seen in septic cases.

Group (3)—In traumatic cases the foreign bodies infect the vitreous where the toxins are generated. These spread to the most superficial layers of the vitreous and thence pass readily into the orbiculus owing to the intimate union of the vitreous and the orbiculus posteriorly.

The anterior surface of the iris is, as a rule, affected simultaneously with the orbiculus even though the ciliary processes are not involved, but apparently independently, due to the fact that the endothelial layer of the anterior surface affords less protection than the double layer over the posterior surface and the ciliary processes.

Only in exceptional cases of metastatic ophthalmitis where the embolism has occurred in the posterior part of the retina or choroid, is the orbiculus alone affected: the inflammation is usually so intense that the whole ciliary body is involved.

THOS. SNOWBALL.

(2) **Landman, Dr. Otto (Toledo, Ohio).—A case of tubercular irido-cyclitis with fatty degeneration and infiltration of the anterior segment of the eye.** *Arch. of Ophthal.*, May, 1925.

(2) **Landman's** paper concerns the pathological investigation of an eye excised for tuberculous irido-cyclitis. A special technique with Sudan III was used in order to show fatty changes (*Klin. Monatsbl. f. Augenheilk.*, 1918, Vol. II, p. 556). These were of two varieties, infiltration and degeneration.

The lamellae of the cornea were in a state of fatty degeneration many of them resembling strings of minute corals. The corneal corpuscles were absent in the parts most affected. Descemet's membrane was deeply stained, also Bowman's, which was split up in parts into red blocks. The iris was infiltrated with masses of fat and fat cells, especially in its anterior portion. The angle of the anterior chamber in the lower two-fifths of its circumference was blocked with fibrinous exudate and large areas of this had undergone fatty degeneration. Fat was found in the ciliary body in less quantity than in the iris, and the anterior part of the sclera showed fatty infiltration and degeneration.

F. A. WILLIAMSON-NOBLE.

(3) **Aland, A. H., M.D. (Ogden, Utah).—Etiology of phlyctenular keratoconjunctivitis.** *Amer. Jl. of Ophthal.*, December, 1925.

(3) **Aland's** paper provides a useful summary of the current views about this disease. After a description of the usual clinical manifestations, the author considers eight separate views set forward as to aetiology : (1) That it is staphylococcal, because of the frequent presence of these organisms. (2) That it is due to intestinal intoxication and entry into the circulation of bacteria or their toxins from the alimentary canal, because of : (*a*) the frequency of gastro-intestinal derangements in phlyctenular patients; (*b*) the improvement of the eye disease after treating these derangements; (*c*) the frequency with which indicanuria is present in this disease. (3) That it is tuberculous. von Pirquet's reaction is positive in 67-92 per cent. of cases and Verhoeff suggests that the negative reactions can be explained on an anaphylactic basis—the patient being in a so-called refractory stage and failing to react to tuberculin at the time of the examination. Sixty-five per cent. of cases have been reported as cured by tuberculin. The incidence of tubercle is very high in all children, and reaches 70 per cent. in autopsies performed at the age of 14 years. (4) That it is an expression of vagus irritability produced by some toxic agent resulting from excess of carbohydrate in the diet. Evidence in favour of this is, that the best and quickest therapeutic results are obtained by a carbohydrate-free diet and the topical and

internal use of atropin. (5) That it is due to naso-pharyngeal sepsis since the disease rapidly clears up on the removal of diseased tonsils, etc. (6) That it bears a close relationship to eczema. (7) That it is due in many cases to the exanthemata. (8) That it is often due to pediculosis capitis. The author concludes that the commonest cause is tuberculous toxaemia, the next commonest being intestinal intoxication.

F. A. WILLIAMSON-NOBLE.

IV.—DISEASE OF EYELIDS

(1) **Botteri (Agram).—Symmetrical symblepharon of both upper eyelids. (Symmetrisches vorderes Symblepharon beider Oberlider.)** Abs. ***Zentralbl. f. d. gesam. Ophthal.***, Heidelberg Congress, July, 1924.

(1) A peasant woman, aged 53 years, who had been suffering from an eye condition for seven weeks previously, contracted a double purulent ophthalmia through bathing her eyes in her own urine. She received the ordinary treatment for this condition, which was carried out in a small provincial hospital. Perforation of both corneae had taken place. This occurred, **Botteri** states, on the third day and after this the eyes were bandaged for twelve days.

Present Condition of the Eyes.—An apparent ptosis on both sides. Trachomatous scars and follicles, and the tarsus thickened and bent like a bow. The upper tarsal margin of both upper lids is connected with the upper two-thirds of the cornea by a strong fibrous band. When she looks down the upper lids are partly everted by this band. The visible part of the cornea is dull. Pannus is present. The right cornea is flattened while the left is enlarged. Both anterior chambers are shallow and there is an atrophy of the iris. Tension in the right is +1, in the left it is -1. Vision amounts to hand movements. Scrapings give a negative result. Operative treatment carried out, consisted in an optical iridectomy in the right eye, and a sclerotomy in the left. Neither had any effect on either the vision or the tension.

Cause of the Symblepharon.—This was due to the immobilization of both eyes, the corneal ulceration, and the swelling of the tarsal conjunctiva with the trachoma, and the fresh gonorrhoeal infection.

There are very few such cases reported in the literature on the subject.

S. SPENCE MEIGHAN.

(2) **Demetriavis (Egypt).—The treatment of ulcerative blepharitis by local vaccination with the broth-vaccines of Besredka. (Traitement des blépharites ulcéreuses par la vaccination locale au moyen des bouillons vaccines de Besredka.)** *La Clin. Ophtal.*, May, 1926.

(2) It is notoriously difficult to make a readable abstract on a subject with which one is insufficiently acquainted. One may fail to supply a missing link in **Demetriavis's** chain of argument or statement, a link which would be readily supplied by one with full knowledge. These apologetic remarks have reference to what seems an important article by the author on the local use of the "bouillon vaccines" of Besredka. It appears that the former had under his care a very rebellious case of ulcerative blepharitis and "having received some bouillon vaccine prepared according to the method of Besredka" he employed it locally with immediate effect. But the missing link is the precise nature of the vaccine, though, from the context one must assume it to be staphylococcic. This is what the author says of these vaccines: "The basis of the discovery is this. A culture broth, of staphylococcus for instance, sterilized and freed of the staphylococci which have been cultivated in it, may be still suitable for the cultivation of other microbes. But the staphylococcus will not grow in it. An antivirus is formed in it which hinders the growth and development of that organism. Besredka to whom we owe this happy discovery, had the idea of making practical use of this hitherto unknown property of culture broths. He made broth vaccines for local dressings. In applying this broth-vaccine to a staphylococcic wound he noticed ". . . that microbes of the same stock died rapidly on contact with this solution and consequently infection ceased suddenly and rapid healing of the wound was brought about." Demetriavis is careful to point out that many failures have taken place with this method and that these failures have not been due to fault on the part of the vaccine but to the fact that the microbe was not of the same stock as the microbe from which the vaccine had been prepared.

ERNEST THOMSON.

(3) **Gallemaerts, V., and de Arric, le F.—A severe case of malignant pustule of the eyelid cured by specific treatment. (Un cas grave de pustule maligne des paupières guéri par le traitement spécifique.)** *Ann. d'Ocul.*, Vol. CLXII, p. 401, 1925.

(3) The case reported by **Gallemaerts** and **de Arric** is of a man, aged 23 years, in whom a cure was effected of a severe malignant pustule of the lower eyelid with extreme oedema of the face and submaxillary regions, in the main by specific serum

from the Pasteur Institute of Paris. Pending the receipt of the serum from Paris, a dose of 90 centigrammes of neosalvarsan was given, but without apparent effect. Within thirty-six hours of the administration of the first dose of serum, definite improvement was obvious. The serum was administered partly subcutaneously but for the greater part by the intravenous route. In all 600 c.c. were given. The temperature rose during the course of the disease to a maximum of 104.4° F., and the pulse to 130 per minute at the height of the illness. Swallowing was extremely difficult.

A fairly extensive consideration is given to recent literature upon the subject of methods of treatment, and a comparison is made. The conclusion is reached that, without the least doubt in the mind of the author, treatment by specific serotherapy surpasses that of intravenous neosalvarsan injection, cauterization or excision.

HUMPHREY NEAME.

(4) **Green, John (St. Louis, Mo.).—Orbital cellulitis following hordeolum.** *Amer. Jl. of Ophthal.*, January, 1926.

(4) **Green's** case was that of a physician, aged 27 years, who had a stye in the right lower lid, which he (the patient) opened with a gold hypodermic needle, previously "flamed." The next day three more styes appeared, and two days later there were proptosis, pain and fever, which went on to typical orbital cellulitis with diminution of vision and oedema of the retina. A free canthotomy was performed and the orbit opened up, a considerable quantity of pus and necrotic material being removed. Cultures showed the presence of staphylococcus aureus. Next day the patient's condition was worse, so curvilinear incisions were made freely through the upper and lower lids, and were packed with rubber tissue, stuffed with gauze, fomentations being applied. The condition slowly improved and a month later the exophthalmos had almost subsided. Vision, however, was reduced to perception of light, the disc being as white as porcelain and the arteries reduced to mere threads. This was probably due to thrombosis following an acute inflammation of the central artery of the retina due to spread from the orbital cellulitis. The author lays stress on the importance of wide incisions through the lids in cases where the cellulitis is diffuse or there is no certainty as to the location of pus pockets. In the upper lid care must be taken not to divide the levator. This can easily be avoided in the upper lid if the incisions are made into the orbital fat each side of the tendon about 1 cm. from the eyebrow.

F. A. WILLIAMSON-NOBLE.

(5) **Pavia, L.—Tuberculosis of the Meibomian Glands. (Tuberculosis de las glándulas de Meibomius.)** *Arch. de Oftal. de Buenos Aires*, Vol. I, p. 89, December, 1925.

(5) **Pavia** describes a case of a patient with pulmonary tuberculosis who showed a marked tuberculous follicular conjunctivitis. In the tarsal region there were discrete, yellowish-white oval nodules underneath the epithelium, 15 on one side and 3 on the other. A piece was excised and microscopic examination showed the typical epithelioid and lymphocytic infiltration of tubercle with giant cell systems and massive disorganization. The changes involved both the periglandular tissue and the substance of the glands themselves. A small chalazion showed similar changes.

W. S. DUKE-ELDER.

V.—MISCELLANEOUS

(1) **Icove, Martin, D. (San Francisco, California).—Intraorbital anaesthesia.** *Amer. Jl. of Ophthal.*, April, 1926.

(1) **Icove** aims at producing anaesthesia by permeation of novocain into the ciliary ganglion, and into the long ciliary nerves. The ganglion, placed between the external rectus and the optic nerve, some 15 millimetres behind the eyeball, is best reached from the temporal side. The technique is as follows:—An ordinary syringe is used with a needle 5 cm. long and of number 22 gauge. The skin of the lower lid is painted with iodine and punctured with the needle at the junction of the lower and outer parts of the orbit, the needle being passed on, between the external and inferior recti. The point must be directed slightly upward and inwards, to avoid striking the floor of the orbit, and is passed in as far as it will go. The syringe is emptied before withdrawing the needle. The best solution is 4 per cent. novocain, with a slight amount of adrenalin. The amount given varies with the type of case. Cataracts require 0.4 c.c. given three-quarters of an hour before operation. Glaucomas, chronic, the same as for cataract; acute, 3 c.c. given at least an hour before; enucleations, 3-4 c.c. three-quarters of an hour before; while 0.5 c.c. suffices to make a subconjunctival injection painless. The conjunctiva being innervated by the supraorbital, supratrochlear, lacrymal and infraorbital nerves is not anaesthetized by the injection, and requires the instillation of cocain or a subconjunctival injection of novocain if the operation involves cutting of this membrane. The method has been tried in strabismus but gave only partial anaesthesia.

F. A. WILLIAMSON-NOBLE.

(2) **Gérard, Georges (Lille).—A case of subconjunctival fat hernia associated with slight exophthalmia in a fat individual. (A propos d'un cas de hernie graisseuse sous-conjonctivale avec légère exophtalmie chez un obèse.)** *La Clin. Ophtal.*, March, 1926.

(2) One is inclined to gather that **Gérard's** case was at first supposed to be a subconjunctival lipoma or lipodermoid, and that the operation corrected the diagnosis to hernia of the orbital fat. The description of the patient permits the reader to visualize his extreme stoutness. For more than two months he had been troubled with a little tumour of the conjunctiva. It was of the size of a large almond but visible only on looking inwards, being hidden under the outer canthus when looking forwards. It was triangular in shape with its base outwards (thus contrasting with lipodermoid which has its base towards the limbus). It was sessile and deeply united with the subconjunctival tissue. By its consistence and colour it appeared to be formed by the juxtaposition of fatty lobules surrounded by a conjunctival sheath. Then one has an illuminating description of the operation in which the more the surgeon dissected the more the fat appeared, until the surgeon became afraid that he would partially empty the orbit if he continued to pull upon the pedicle 8 or 10 mm. broad by which the tumour was united with the orbital fat. He finished the operation quickly and applied a firm bandage for twenty-four hours. The wound healed easily. After this Gérard goes minutely into the anatomy of the orifices at the base of the orbit through which the "periconjunctival" fat is continuous with the orbital fat, and through which also pass forward experimental injections made into the depth of the orbit and pathological infiltrations of gas, pus or blood. Considerable passages are quoted from Charpy who seems to be the principal French writer on this portion of anatomy.

ERNEST THOMSON.

(3) **Gaston, Ira E. (Portland, Oregon).—Milk injections in ophthalmic cases.** *Amer. Jl. of Ophthal.*, February, 1926.

(3) **Gaston's** paper opens with a brief review of the literature on this subject. Numerous types of foreign protein have been used, the best are those the injection of which produces a considerable general systemic reaction. Petersen has pointed out that recovery as a result of this treatment, is very closely related to the degree of negative phase induced by injection of the protein. Riech concludes that "rise in temperature" increases the biological activity of the body cells, Marin Amat that the action is through the sympathetic nervous system, which acts by stimulating the production of proteolytic ferments. Fulton considers the therapeutic effect as

due to stimulation of the autonomic system and bone marrow, with increased permeability of the vascular walls causing increased leucocytic activity in the affected area, while Key believes the therapeutic effect to be produced by alteration in the activity of the whole organism rather than by direct influence on the pathological process. The most suitable substance to inject is probably whole milk which has become slightly contaminated with bacteria. The milk is boiled in a water bath for three to four minutes before use, and when it has cooled sufficiently, 10 c.c. (for an adult) are injected intragluteally. The dose is usually repeated on the second and fourth days or third and fifth days, depending on the severity of the reaction and the urgency of the case. Though not mentioned in this paper, some observers recommend that the injections should be continued until no rise of temperature is provoked. Experience shows that non-specific protein therapy exercises its most favourable effect in acute and subacute inflammations of the anterior segment of the eyeball and in gonococcal conjunctivitis. With regard to the latter, Lindner frequently noted disappearance of gonococci from the conjunctiva within thirty-six to forty-eight hours after the institution of milk injections. Various workers have reported good results in the following diseases:—acute and subacute idiopathic iritis and iridocyclitis, serpiginous ulcer, hypopyon keratitis, traumatic infections of the anterior segment of the eyeball, sympathetic ophthalmitis, keratomalacia, and for relief of pain in panophthalmitis. Particularly good results are obtained when the infection is due to staphylococcus aureus or pneumococcus.

F. A. WILLIAMSON-NOBLE.

BOOK NOTICES

Privy Council Medical Research Council. Reports of the Committee upon the Physiology of Vision. 1. Illumination and Visual Capacities (a review of recent literature). By R. J. LYTHGOE, M.A., B.Ch. London: H.M. Stationery Office, 1926. Pp. 77. Price 2s. 6d.

The Committee upon the physiology of vision was initiated by the Medical Research Council after the British Medical Association in 1924 had forwarded to them a resolution unanimously adopted at a meeting representative of ophthalmologists from all parts of the United Kingdom. In the terms of this resolution the Association was recommended "to press strongly upon the Government

the great need for research upon many unsolved problems of vision in relation to the requirements of the combatant services." The members of the Committee are: Sir John H. Parsons (chairman), Surgeon-Commander M. B. Macleod, F. C. Bartlett, Wing-Commander E. C. Clements, Major J. H. Gurley, H. Hartridge, Sir William Lister, J. W. T. Walsh and D. R. Wilson (secretary). It is stated in the introduction that "at an early stage it appeared to the Committee that a critical survey of the work already done in this and other countries in some parts of the applied physiology of vision would be useful to them in planning their programme of research. The Council accordingly made arrangements for Mr. R. J. Lythgoe to prepare the analysis of the more recent work upon the relation of illumination to visual capacities which is given in the present report."

The report begins with a page of useful definitions of the terms used in illumination work. After this the literature of the subject is briefly, but adequately abstracted under the following heads: the influence of different intensities of illumination on visual acuity; the effect of varying the character of the illumination on visual acuity; the discrimination of (1) shapes, (2) differences of brightness; adaptation as a factor in visual discriminations; the influence of lateral illumination, including "glare," on visual judgments; the speed of retinal impression, with special reference to telegraphic signalling and to lateral illumination; the influence of illumination on the discrimination of colours; visual fatigue; methods and apparatus. This is followed by fourteen pages of bibliography and an index. The report is indispensable to any one contemplating any research work on the subject. The bibliography alone would have been of great assistance and the Committee are to be warmly congratulated on the high standard they have set themselves for subsequent reports.

Bulletin of the Ophthalmological Society of Egypt, 1926.

The Twenty-third Annual Meeting of the Ophthalmological Society of Egypt was held in Cairo in March. In his presidential address Dr. el-Mazni Bey congratulated the society on the number of members, of whom 87 were present. The number of ophthalmic hospitals is now 29, of which 21 are permanent buildings and 8 are travelling hospitals under canvas. The number of new patients treated in 1925 was nearly a quarter of a million. The most important communication was that of Dr. Meyerhof on "Early Arabic Medical and Ophthalmological Science," which will be noticed elsewhere.

El-Kattan reported two cases of corneal tumour which he believed to be endotheliomata. Demetriadis recommended a stock vaccine applied locally for the treatment of ulcerative blepharitis.

Sobhy Bey and Sayed Eisa described a case of bilateral tuberculosis of the conjunctiva and lacrymal glands. Tewfik gave a useful resumé of the method of preparation of the patient for cataract operation, though he omitted the important step of effecting retrobulbar anaesthesia. He also made the useful suggestion of treating post-operative lagophthalmos by Thiersch-grafting. Sobhy Bey reported a case of angioid streaks in the retina, also a case of syphilitic inflammation of the central artery of the retina. Zaky treated a case of sympathetic ophthalmitis, after excision of the blind sympathizing eye, with increasing doses of sodium salicylate until the patient was taking 21 grammes a day. The vision improved from 2/60 to 6/18, with correction.

CORRESPONDENCE

To the Editor of THE BRITISH JOURNAL OF OPHTHALMOLOGY

SIR,—Knowing the erudition with which your journal is conducted, I would very much value your opinion on a small matter of pedantry.

We know that medical men are very lax in their use of the English language, and we witness glaring examples of it from time to time, such as the use of the expression "the acute abdomen." It passes the wit of the ordinary man to understand how any portion of the body with so much rotundity as the abdomen can be called "acute," but, from the context, we gather that the users of the term refer to some inflammatory or other acute ailment affecting the abdominal cavity. I regret to see that a similar looseness of expression has crept into ophthalmic literature, for I lately received a notice announcing a discussion on "macula colobomata." It seems to me we have here two nouns, one in the singular and the other in the plural. Surely macula should either be in the genitive case or should be converted into an adjectival form. I should be glad to have the pronouncement of the erudite member of your staff on the subject.

Yours faithfully,

"PEDANT."

November 17, 1926.

[We sympathize with "Pedant" in this matter and have no hesitation in offering our opinion that he is right in his contention. The classical scholar, who deplored the fact that medical Latin

barked at the best of times, might have waxed as eloquent over much of the medical English. It is to be feared that the authors of the *King's English* would find innumerable examples in our pages to illustrate the common faults in grammar and composition; this is largely due, in our opinion, to the fact that most people write as they would speak. We have heard one who prides himself on his English, split the infinitive in speech, a thing he would never have done in cold print. May we, in return, ask "Pedant" whether he is quite correct in writing of an "acute ailment affecting the abdominal cavity"; does he not mean to refer to the contents of the said cavity?—EDITORS.]

NOTES

The Royal Society

AMONG the elections to the Council of the Royal Society for the ensuing year we are pleased to see the name of Sir John Parsons.

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Prize

THE Paul Philip Reitlinger Prize for 1926 of the University of London has been awarded to Mr. Stewart Duke-Elder for his essay on "The Ocular Circulation: its Normal Pressure Relationships and their Physiological Significance," which was published in this journal, October, 1926.

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Appointment

DR. J. A. VALENTINE has been appointed Hon. Ophthalmic Surgeon to the Royal West Sussex Hospital, Chichester.

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The Model Student's Eye Strain and its Cause

COULTON, in his "Social Life in Britain from the Conquest to the Reformation," gives the following excerpt from Trevisa's "Higden," VIII, 217, which deals with the model student: "In his childhood he lernede his gramere and was so disesed with the heedache that he hadde non hope to spede afterward in lore. His moder spak to hym and seide, 'Sone,' I trowe that the lewednesse and unsemeliche

tonsure that thou usest is cause of thy woo'; thanne afterward he usede tonsure as a clerk, and was hool of al that woo."

This is taken from a fourteenth century statute of University College, Oxford; which must be nearly contemporary with Roger Bacon's work on optics. We doubt if any ophthalmic surgeon nowadays would recommend a visit to the barber as a cure for headache, but it is interesting to note the good effect of the tonsure in this instance, and we ourselves had a female patient lately who informed us that her headaches had been much improved after her hair was "shingled."

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Convention of English-Speaking Ophthalmological Societies

WE understand that the small deficit in the balance sheet of this Convention has been met by a grant from the Ophthalmological Society of the United Kingdom, and, therefore, there will be no necessity to make a call upon the guarantors.

FUTURE ARRANGEMENTS

1927

January 14.—Royal Society of Medicine, Section of Ophthalmology.

February 4.—North of England Ophthalmological Society, at Liverpool.

February 10.—Royal London Ophthalmic Hospital Dinner.

February 11.—Royal Society of Medicine, Section of Ophthalmology.

March 4.—North of England Ophthalmological Society, at Sheffield.

March 11.—Royal Society of Medicine, Section of Ophthalmology (Clinical).

April 1.—North of England Ophthalmological Society, at Newcastle-on-Tyne.

April 28-30.—Annual Congress of the Ophthalmological Society of the United Kingdom.

May 13.—Royal Society of Medicine, Section of Ophthalmology.

June 10.—Royal Society of Medicine, Section of Ophthalmology (Annual).